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EXAMINER	
CHEN, JACK S J	
ART UNIT	**PAPER NUMBER**
2813	

DATE MAILED: 05/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/935,255	WEIMER, RONALD A.	
	Examiner	**Art Unit**	
	Jack Chen	2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-57 and 73-121* is/are pending in the application.

4a) Of the above claim(s) *15,22-57,73-96,101,102,107-111 and 113-121* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,16-21,97-100,103-106 and 112* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *3/15/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-14, 16-21, 97-100, 103-106 and 112 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Re claims 1, 7, 8, 9, 16, 17, 18, 19 and 20, the term "continuous" is not described/supported by the original specification.

Re claims 1, 5, 7, 8, 9, 16, 17 and 18, the phrase "the **silicon layer** and **silicon nitride layer** having a **combined thickness** of about **10-30 angstroms**" is not described/supported by the original specification.

Re claim 5, the term "uniform" is not described/supported by the original specification.

Re claim 6, the phrase "the **combined thickness** of the **silicon layer** and the **silicon nitride** layer is **about 10 to about 20 angstroms**" is not described/supported by the original specification.

Re claims 19 and 20, the phrase "the nitridized silicon layer having a thickness of about 10-30 angstroms" is not described/supported by the original specification (i.e., the claimed range thicknesses).

The remaining claims are rejected for depending from the above rejected claims.

For the purpose of patentability, these claims will be interpreted as best understood.

Claim status

1) Claims canceled: 58-72

2) Claims pending: 1-57, 73-121

3) Claims withdrawn from further consideration: 15, 22-57, 73-96, 101, 102, 107-111 and 113-121

4) **Claims Active: 1-14, 16-21, 97-100, 103-106, 112**

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-14, 16-19, 97-100, 103-104, 106 and 112 are rejected under 35 U.S.C. 102(e) as being anticipated by Muralidhar et al., U.S./6,297,095 B1.

Re claim 1, Muralidhar discloses a method of forming a nitride barrier layer, comprising the steps of: exposing a dielectric layer 14/102 to a silicon-containing gas under low partial pressure to deposit a continuous layer of silicon 15/16/17/18/19/21/103/104 thereon (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the continuous layer is comprised of a plurality of

uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer); and exposing the silicon layer to a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 2, wherein the dielectric layer is exposed to the silicon-containing gas at a partial pressure of about 10^{-2} Torr or less (col. 11, lines 37-50).

Re claim 3, wherein the dielectric layer is exposed to the silicon-containing gas at a partial pressure of about 10^{-2} to about 10^{-7} Torr (col. 11, lines 37-50)..

Re claim 4, wherein the dielectric layer is exposed to the silicon-containing gas at a temperature of about 500^{O}C to about 700^{O}C (col. 10, lines 35-58).

Re claim 5, a method of forming a nitride barrier layer, comprising the steps of: irradiating a dielectric layer 14/102 with a silicon-containing gas under low partial pressure to nucleate the dielectric layer with a uniform layer of silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the uniform layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102);

and exposing the silicon layer to a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 6, wherein the combined thickness of the silicon layer and the silicon nitride layer is about l 0 to about 20 angstroms (i.e., 18 angstroms, see above).

Re claim 7, a method of forming a nitride barrier layer, comprising the steps of: exposing a dielectric layer 14/102 to a silicon-containing gas under low partial pressure to deposit a continuous layer of about l 0 to about 30 angstroms silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65 and col. 12, lines 50-55; i.e., 15 angstroms; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer) thereon; and nitridizing the silicon layer in a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the

radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 8, a method of forming a nitride barrier layer, comprising the steps of: exposing a surface of a dielectric layer 14/102 to a silicon-containing gas at a low partial pressure to nucleate the surface of the dielectric layer with a continuous layer of silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer); and exposing the silicon layer to a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 9, a method of forming a nitride barrier layer, comprising the steps of: exposing a dielectric layer 14/102 to a silicon-containing gas at a partial pressure of about 10^{-2} Torr or less (col. 11, lines 37-50) to deposit a continuous layer of about 10 to about 30 angstroms silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65 and col. 12, lines 50-55; i.e., 15 angstroms; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer) thereon; and nitridizing the silicon layer to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 10, wherein the dielectric layer is exposed to the silicon-containing gas at a temperature of about $500^{O}C$ to about $700^{O}C$ (col. 10, lines 35-58).

Re claim 11, wherein the silicon-containing gas is selected from the group consisting of dichlorosilane, silicon tetrachloride, silane, and disilane (col. 10, lines 25-35).

Re claim 12, wherein the step of exposing the dielectric layer to the silicon-containing gas is by plasma enhanced chemical vapor deposition, low pressure chemical vapor deposition, or rapid thermal chemical vapor deposition (col. 10, lines 14-58).

Re claim 13, wherein the silicon-containing gas is deposited by rapid thermal chemical vapor deposition (col. 5, lines 47-67) at about 500^{O}C. to about 700^{O}C (i.e., 600 ^{O}C, col. 10, lines 14-58)..

Re claim 14, wherein the dielectric layer comprises silicon dioxide (col. 7, lines 49-55).

Re claim l 6, a method of forming a nitride barrier layer, comprising the steps of: exposing a dielectric layer to a silicon-containing gas at a partial pressure of about 10^{-2} to about 10^{-7} Torr (i.e., 10^{-2} Torr, col. 11, lines 37-50) to nucleate the dielectric layer 14/102 with a continuous layer of silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer); and exposing the silicon layer to a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms)

angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 17, a method of forming a nitride barrier layer, comprising the steps of: exposing a dielectric layer 14/102 o a silicon-containing gas at a partial pressure of about 10^{-2} to about 10^{-7} Torr (i.e., 10^{-2} Torr, col. 11, lines 37-50), a temperature of about 500^{O}C. to about 700^{O}C. (i.e., 600 ^{O}C , col. 10, lines 35-58) and a duration of about 1 second to about 5 minutes (i.e., 30 seconds, col. 10, lines 35-58), to nucleate the dielectric layer with a continuous layer of silicon 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer); and exposing the silicon layer to a nitrogen-containing gas to form a silicon nitride barrier layer 106/107 (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 18, a method of forming a nitride barrier layer, comprising the steps of: depositing a continuous silicon layer 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines

25-65; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer) onto a dielectric layer 14/102 by exposing the dielectric layer to a silicon-containing gas under low partial pressure; and thermally annealing the silicon layer in a nitrogen-containing gas (figs. 23-25; col. 16, lines 19-36), the silicon layer and silicon nitride layer having a combined thickness of about 10-30 angstroms (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms), see figs. 1-28 and cols. 1-22 for more details.

Re claim 19, a method of forming a nitride barrier layer, comprising the steps of: depositing a continuous silicon layer 15/16/17/18/19/21/103/104 (figs. 6-10, 21-22, col. 10, lines 25-65; note: in this case, the continuous layer is comprised of a plurality of uniform nanoclusters that were formed across the surface of the tunnel dielectric layer 14/102; further in this regard, each of the nanoclusters can also be considered as a continuous layer) onto a dielectric layer 14/102 by exposing the dielectric layer to a silicon-containing gas under low partial pressure, and exposing the silicon layer to a nitrogen-containing gas at a temperature of about 700^{O}C. to about 900^{O}C. to nitridize the silicon layer (figs. 23-25; col. 16, lines 19-36), the nitrideized silicon layer having a thickness of about 10-30 angstroms, which is the combined thickness of the

silicon layer and silicon nitride layer (i.e., 18 angstroms; note: the nanocyrstal is hemispherical, i.e., see claim 4 of the prior art; the diameter of the nanocrystal is about 30 angstroms, see col. 12, lines 50-55 and the radius/thickness of the nanocrystal is about 15 angstroms, which is half of the diameter value; and the thickness of the silicon nitride barrier layer is 5 angstroms or no greater than 10% of the diameter of the nanoclusters, see col. 16, lines 45-55, which is 3 (30X0.1=3 angstroms) angstroms; therefore, the combined thickness is 15+3=18 angstroms or 15+5=20 angstroms)see figs. 1-28 and cols. 1-22 for more details.

Re claim 97, wherein the silicon on the dielectric layer has a thickness of up to about 30 angstroms (i.e., 30 angstroms, col. 12, lines 50-55).

Re claim 98, wherein the silicon-containing gas is selected from the group consisting of dichlorosilane, silicon tetrachloride, silane, and disilane (i.e., silane; col. 10, lines 25-35).

Re claim 99, wherein the step of exposing the dielectric layer to the silicon gas comprises chemical vapor deposition of the silicon gas (col. 10, lines 14-58).

Re claim 100, wherein the step of exposing the dielectric layer to the silicon gas comprises rapid thermal chemical vapor deposition of the silicon gas (col. 5, lines 47-67 and col. 10, lines 14-58)..

Re claim 103, wherein the step of exposing the silicon layer comprises thermally annealing the silicon layer in a nitrogen-containing gas (col. 16, lines 19-37).

Re claim 104, wherein the step of exposing the silicon layer comprises a temperature of about 700^{O}C. to about 900^{O}C (col. 16, lines 19-37).

Re claim 106, wherein the nitrogen-containing gas is selected from the group consisting of nitrogen, ammonia, nitrogen trifluoride, nitrogen oxide, and a nitrogen-helium mixture (col. 16, lines 19-37).

Re claim 112, wherein the step of exposing the dielectric layer comprises a partial pressure of about 10^{-2} to about 10^{-7} Torr (i.e., 10^{-2} Torr, col. 11, lines 37-50), a temperature of about 500^{O}C. to about 700^{O}C. (i.e., 600 ^{O}C , col. 10, lines 35-58) and a duration of about 1 second to about 5 minutes (i.e., 30 seconds, col. 10, lines 35-58).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 20-21 and 105 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muralidhar et al., U.S./6,297,095 B1.

Muralidhar disclosed above; however, Muralidhar is silent to the flow rate and duration of the nitrogen-containing gas as required in claims 20-21 and 105. The claimed ranges of flow rate and time/duration, absent evidence of disclosure of criticality for the range giving unexpected results are considered to involve routine optimization while has been held to be within the level of ordinary skill in the art. As noted in *In re Aller* 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955), the selection of reaction parameters such as flow rage, time/duration

would have been obvious. *See also In re Waite 77 USPQ 586 (CCPA 1948); In re Scherl 70 USPQ 204 (CCPA 1946); In re Irmscher 66 USPQ 314 (CCPA 1945); In re Norman 66 USPQ 308 (CCPA 1945); In re Swenson 56 USPQ 372 (CCPA 1942); In re Sola 25 USPQ 433 (CCPA 1935); In re Dreyfus 24 USPQ 52 (CCPA 1934).*

Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made to select any suitable flow rate and exposing time in the method of Muralidhar in order to nitridize the silicon layer. Furthermore, the specification contains no disclosure of either the critical nature of the claimed process (i.e. the flow rate of 100-10000 sccm for about 1 second to about 180 minutes) or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen limitations or upon another variable recited in a claim, the Applicant must show that the chosen limitations are critical. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990).

Response to Arguments

5. Applicant's arguments filed March 15, 2006 have been fully considered but they are not persuasive.

Applicant stated that the support for the new added limitation in the claims can be found at page 4, lines 14-15, and page 6, lines 21-22 and the drawing (i.e., Fig. 2, silicon layer 18). The Examiner respectfully disagrees because none of the above cited places show 1) forming a **continuous** or **uniform** layer of silicon, 2) the **silicon layer** and **silicon nitride layer** having a **combined thickness** of about **10-30 angstroms (or 10-20 angstroms)** and 3) the nitridized silicon layer having a thickness of about 10-30 angstroms.

Applicant stated that the scope of the claims is intended to be the same as before filing this amendment. Examiner respectfully disagrees because the new added limitations in the claims narrow the scope of the instant claims.

Applicant argues that the applied reference fails to teach the claimed limitations (i.e., depositing a *continuous* layer of silicon on a dielectric layer and the *combined thickness* of the silicon layer and silicon nitride layer is about 10-30 angstroms). Examiner respectfully disagrees for the reasons presented in the rejection of the claims above.

Conclusion

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack Chen whose telephone number is (571)272-1689. The examiner can normally be reached on Monday-Friday (9:00am-6:30pm) alternate Monday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead can be reached on (571)272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jack Chen
Primary Examiner
Art Unit 2813

May 30, 2006